

Chloride Vacu-vials® Kit

K-2103: 0 - 40.0 ppm (Prog. # 26)

Instrument Set-up

For CHEMetrics photometers, follow the **Setup and Measurement Procedures** in the operator's manual. For spectrophotometers, follow the manufacturer's instructions to set the wavelength to **455 nm** and to zero the instrument using the reagent blank generated below.

Sample Temperature

Sample temperatures that deviate significantly from 20°C (68°F) may introduce test result bias.

Sample Pretreatment

Turbid samples must be filtered prior to performing this test.

Generating Reagent Blank

A fresh reagent blank must be generated for each series of tests and for each new lot of Chloride Vacu-vials. Use a reagent blank ampoule from the same lot as the test Chloride Vacu-vials. To generate the reagent blank ampoule, perform **Steps # 1-5** of the test procedure using **distilled water** in place of sample in **Step # 1**.

Test Procedure

1. Fill the sample cup to the 20 mL mark with the sample to be tested (fig. 1).
2. Using the syringe, add 1.0 mL of S-2100 Activator Solution. Stir to mix the contents of the cup.
3. Place the Vacu-vial ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig. 2).
4. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.

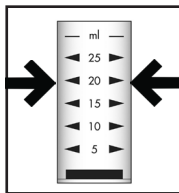


Figure 1

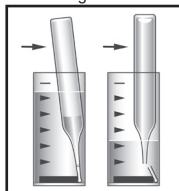


Figure 2

5. Dry the ampoule. Obtain a test result **1 minute** after snapping the tip.
6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) chloride (Cl⁻).

NOTE: If using a spectrophotometer that is not pre-calibrated for CHEMetrics products, then use the **equation below** or the **Concentration Calculator** on the website.

$$\text{ppm} = 29.68 (\text{abs})^2 + 10.10 (\text{abs}) + 0.23$$

Test Method

The Chloride Vacu-vials^{®1} test kit employs the ferric thiocyanate chemistry^{2,3,4}. Chloride reacts with mercuric thiocyanate to liberate thiocyanate ion. Ferric ion reacts with thiocyanate ion to produce an orange-brown thiocyanate complex in proportion to the chloride concentration.

1. Vacu-vials is a registered trademark of AquaPhoenix Scientific, LLC U.S. Patent No. 3,634,038.
2. APHA Standard Methods, 23rd ed., Method 4500-Cl⁻ E - 1997.
3. Zall, David; Fisher, Donald; Garner, Mary; "Photometric Determination of Chlorides in Water", Analytical Chemistry; Vol. 28, No. 11, pp 1665-1668; November 1956.
4. O'Brien, James; "Automatic Analysis of Chlorides in Sewage", Wastes Engineering, pp 670-672, December 1962.

Important Note

The Vacu-vial ampoules contain a light sensitive reagent. Store in the dark when not in use.

Safety Information

Read SDS before performing this test procedure. Wear safety glasses and protective gloves.

